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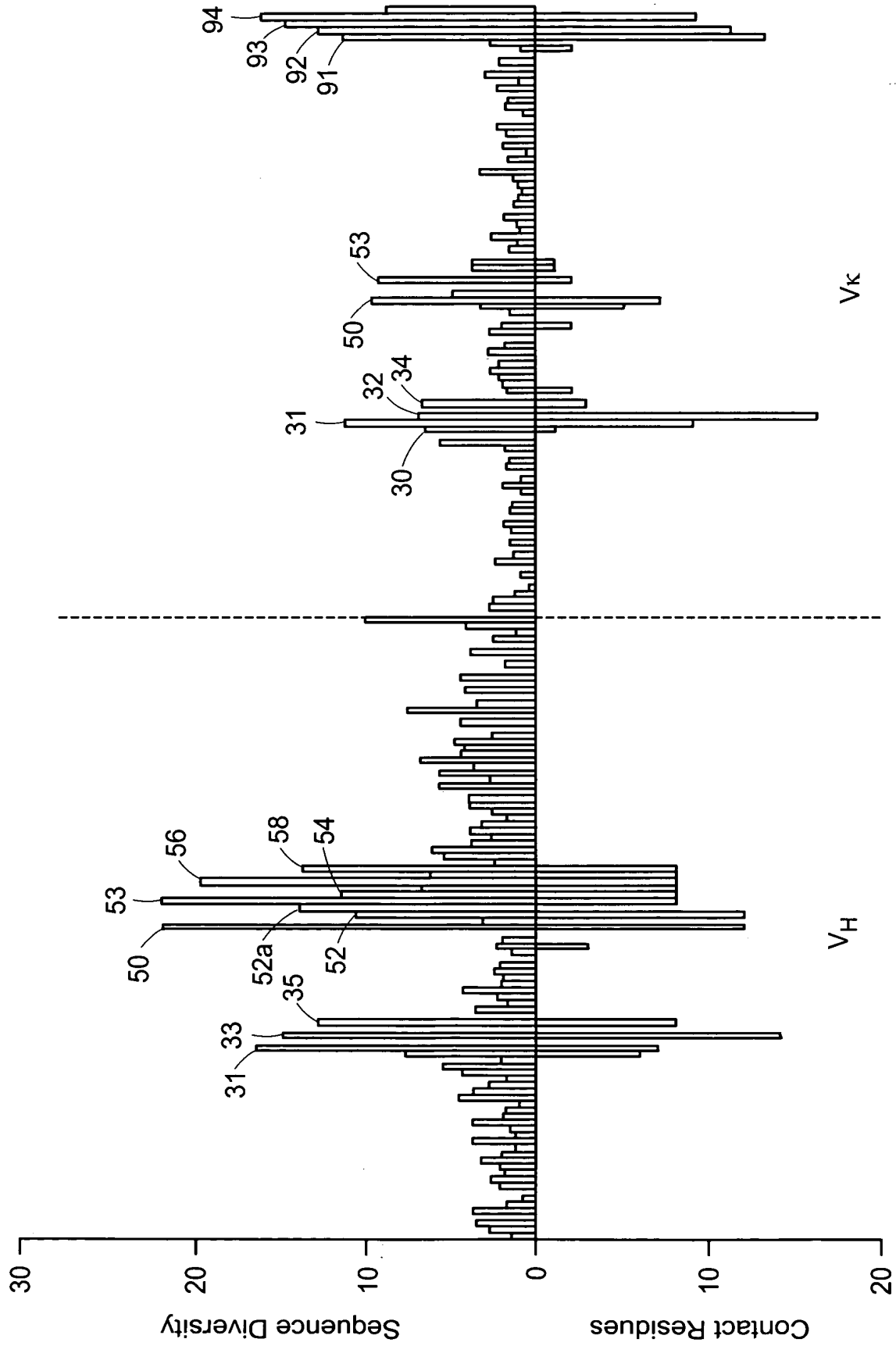


FIG. 1

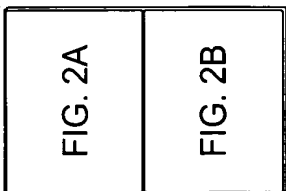


FIG. 2

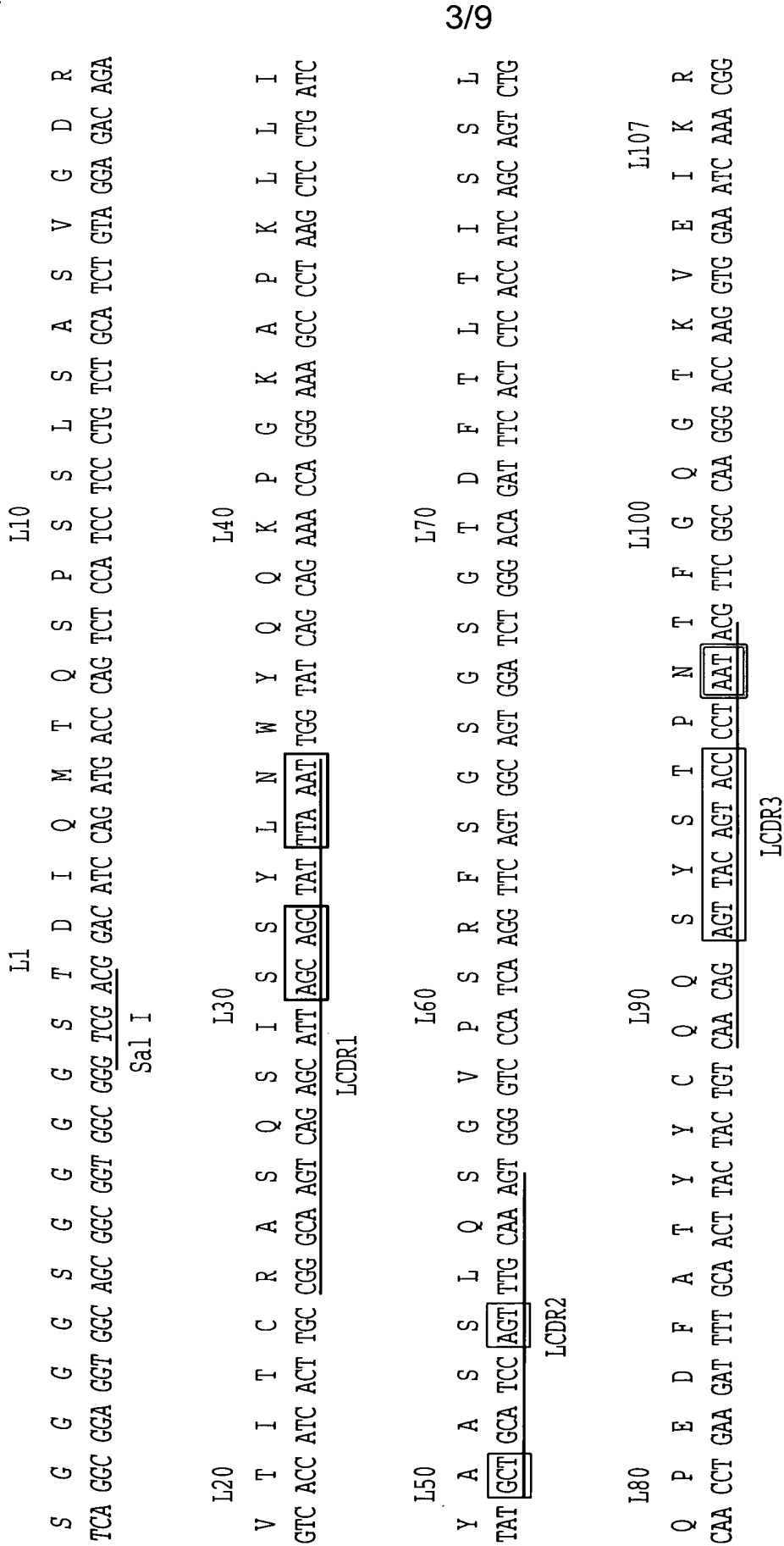
FIG. 2A

H1 H10 H20 H30
E V Q L L E S G G L V Q P G G S L R L S C A A S G F T F S
GAG GTG CAG CTG TTG GAG TCT GGG GGA GGC TTG GTA CAG CCT GGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTT AGC

H40 H50 H52 a H50
S Y A M S W V R Q A P G K G L E W V S A I S G S G S T Y Y
AGC TAT GCC ATG AGC TGG GTC CGC CAG GCT CCA GGG AAG GGG CTG GAG TGG GTC TCA GCT ATT AGT GGT AGT GGT AGC ACA TAC TAC
HCDR1 HCDR2

H60 H70 H80 H82 a b c
A D S V K G R F T I S R D N S K N T L Y L Q M N S L R A E D
GCA GAC TCC GTG AAG GGC CGG TTC ACC ATC TCC AGA GAC AAT TCC AAG AAC ACG CTG TAT CTG CAA ATG AAC AGC CTG AGA GCC GAG GAC

H90 H98 H100 H110 H113
T A V Y Y C A K S Y G A F D Y W G Q G T L V T V S S G G G
ACG GCC GTA TAT TAC TGT GCG AAA AGT TAT GGT GCT TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCG AGC GGT GGA GGC GGT
HCDR3 XhoI



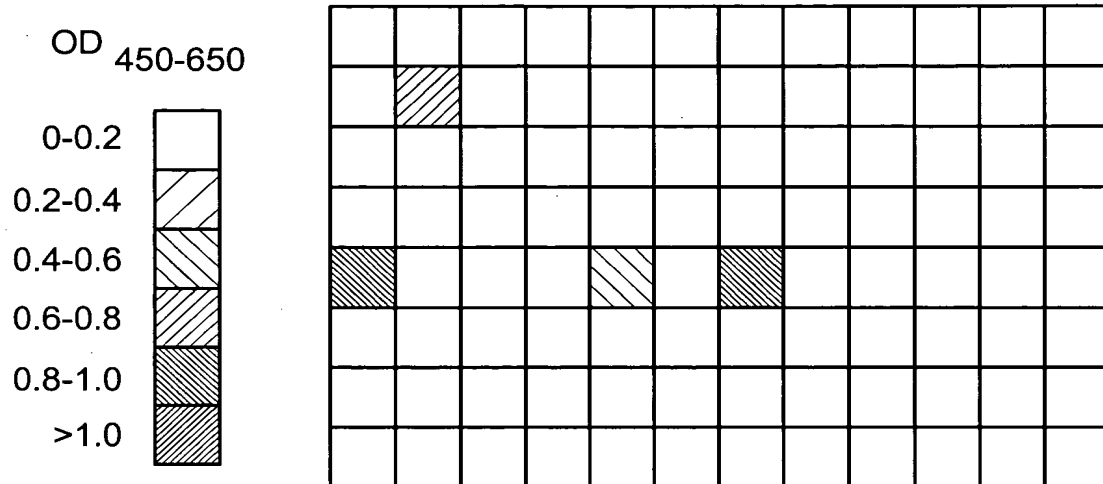
☐ Diversified in "Primary" library only

☐ Diversified in "Somatic" library only

☐ Diversified in "Primary" and "Somatic" libraries

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"Primary" NNK library before pre-selection



"Primary" NNK library after pre-selection

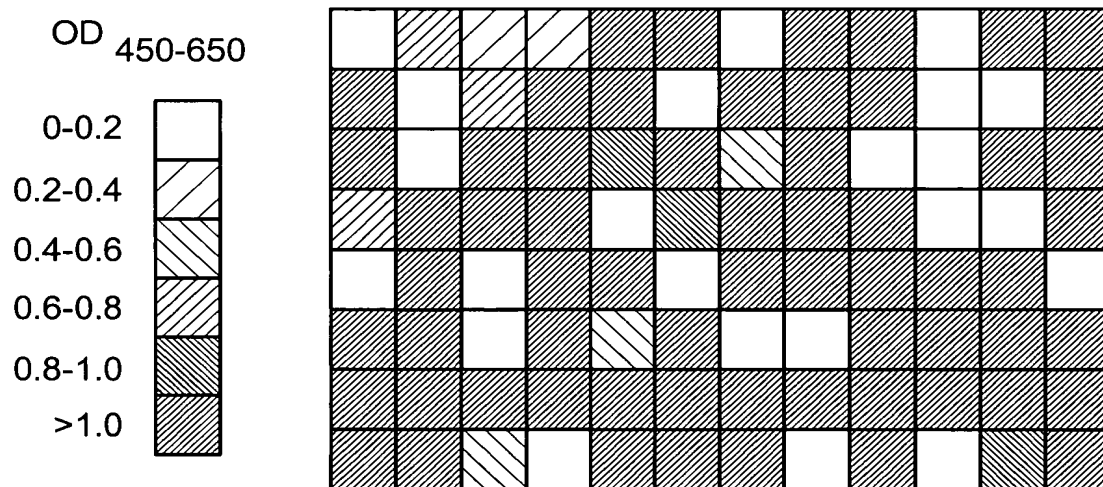


FIG. 3

FIG. 4A

FIG. 4B

FIG. 4C

FIG. 4



Clones	Antigen	Heavy chain (framework DP-47)				Light chain (framework DPK9)				No*
		Library	CDR1	CDR2		CDR3	CDR1	CDR2	CDR3	
UBIA 1-9	Bovine ubiquitin	Primary NNK	SYAMS	IIGSEGWPTIYADSVKG		GGSMFDY	RASQSISSYLN	RASSLQS	QQSSNTPTPT	9
UBIB 1,3-10	"	SomaticNNK	AVAMT	AISGSGGSTVYADSVKG		KASSFDY	RASQSISSYLN	AASSLQS	QQSYSTPST	9
BIPAL-3,6,9	RatBIP	PrimaryNNK	SYAMS	LISPLGKDTSYADSVKG		RAGIFDY	RASQSISSYLN	HASRLQS	QQYRLRPPT	5
BIPA4	"	"	SYAMS	GIRRVGQATSYADSVKG		GGRLFDY	RASQSISSYLN	YASHLQS	QQYLLDPVT	1
BIPA5,7,9	"	"	SYAMS	AINTKGMTTDYADSVKG		GSOAFDY	RASQSISSYLN	QASFLQS	QQGYNKPPT	3
BIPB1-4,6-10	"	SomaticNNK	NYQMH	AISGSGGSTVYADSVKG		GTRRFDY	RASQSISSYLN	AASSLQS	QQSYSTPVT	9
HISA 1,2,7-8	Bovine Histone	PrimaryNNK	SYAMS	AISPKGRRTYADSVKG		RDKLFDY	RASQSISSYLN	EASTLQS	QQEKMPPT	4
HISA 6	"	"	SYAMS	RITPAGRRTTYADSVKG		PSPPDFY	RASQSISSYLN	HASILQS	QQGQHRPPT	1
HISA 3,9	"	"	SYAMS	RITPAGHRTTYADSVKG		QVSRFDY	-	-	-	2
HISA 10	"	"	SYAMS	TISPQGLRTTYADSVKG		GRPRFDY	-	-	-	1
HISA 4	"	"	SYAMS	TISPKGRRSTTYADSVKG		TNRSFDY	RASQSISSYLN	RASRLQS	QQRAKKPPT	1
HISB 1,3	"	SomaticNNK	KYRMF	AISGSGGSTVYADSVKG		GRWPFDY	RASQSISSYLN	AASSLQS	QQSYSTPHT	2
HISB 6	"	"	RYRMH	AISGSGGSTVYADSVKG		NEPRFDY	RASQSISSYLN	AASSLQS	QQSYSTPST	1
HISB 2	"	"	RYRMG	AISGSGGSTVYADSVKG		GYRKFDY	RASQSISSYLN	AASSLQS	QQSYSTPPT	1
HISB 4,7,9	"	"	RYRMG	AISGSGGSTVYADSVKG		GYRKFDY	RASQSISSYLN	AASSLQS	QQSYSTPPT	3

FIG. 4A



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HISB5,8	"	"	RYRMG	AISGSGGSTYYADSVKG	GYRKFDY	RASQILRTL ¹ N	AASSLQ ² S	QQSYSTPGT ²	2
NIP2,7,10	NIP-BSA	PrimaryNNK	SYAMS	RIPARGTVTHYADSVKG	GGLRFDY	RASQISSYLN	HASALQ ³ S	QQSYRKPTT ³	3
NIP3	"	"	SYAMS	GISH ¹ TGSNTRYADSVKG	RHKGF ¹ DY	RASQISSYLN	RAS ¹ TLQ ¹ S	QQGYRFPAT ¹	1
NIP5,6,9	"	"	SYAMS	RIAPEGGR ³ TKYADSVKG	GRYWF ³ DY	RASQISSYLN	RASRLQ ³ S	QQSRNAPT ³	3
NIP1,8	"	"	SYAMS	TISYLGEK ² TRYADSVKG	SRRTF ² DY	RASQISSYLN	KAS ² TLQ ² S	QQRSRPPAT ²	2
NIP1	"	SomaticNNK	RYGMH	AISGSGGSTYYADSVKG	RGLGF ¹ DY	RASQISSYLN	AASSLQ ¹ S	QQSYSTPLT ¹	1
NIP2-4,7	"	"	SYRMV	AISGSGGSTYYADSVKG	RGMAF ⁴ DY	RASQSIHSRL ⁴ S	AASSLQ ⁴ S	QQSYSTPLT ⁴	4
NIP5,6	"	"	KYNMH	AISGSGGSTYYADSVKG	ARWRF ² DY	RASQISSYLN	AASSLQ ² S	QQSYSTPT ²	2
NIP8	"	"	RYRMH	AISGSGGSTYYADSVKG	TPRPFDY	RASQSIQMGL ¹ S	AASSLQ ¹ S	QQSYSTPNT ¹	1
NIP9	"	"	RYRMH	AISGSGGSTYYADSVKG	TPRPFDY	RASQISENL ¹ L	AASSLQ ¹ S	QQSYSTPLT ¹	1
10CG1	FITC-BSA	PrimaryNNK	SYAMS	TISPYGKQ ¹ TRYADSVKG	KSQHF ¹ DY	RASQISSYLN	AASRLQ ¹ S	QQRGCGPPT ¹	1
10CG2	"	"	SYAMS	TITPRGSL ¹ TSYADSVKG	TAPPFDY	RASQISSYLN	RASRLQ ¹ S	QQSQRKPE ¹ T	1
10CG3	"	"	SYAMS	GISAYGTV ¹ TYADSVKG	RRAGF ¹ DY	RASQISSYLN	RASRLQ ¹ S	QQPRHMPQT ¹	1
10CG5	"	"	SYAMS	SITNSGLAT ¹ AYADSVKG	RSFRF ¹ DY	RASQISSYLN	HASRLQ ¹ S	QQRHTNPPT ¹	1
10CG6	"	"	SYAMS	GITTRGQT ¹ TRYADSVKG	TYPKF ¹ DY	RASQISSYLN	NASRLQ ¹ S	QQSKLSPVT ¹	1
10CG7	"	"	SYAMS	TIPARGGH ¹ TKYADSVKG	SAKAF ¹ DY	RASQISSYLN	QASN ¹ LQ ¹ S	QQRSAGPLT ¹	1
10DH1	"	SomaticNNK	MYRMG	AISGSGGSTYYADSVKG	RTFRF ¹ DY	RASQISIRSL ¹ S	AASSLQ ¹ S	QQSYSTPRT ¹	1
10DH2,3	"	"	SYAMT	AISGSGGSTYYADSVKG	KTGMF ² DY	RASQIRTRL ² R	AASSLQ ² S	QQSYSTPRT ²	2
11CG1	Human leptin	PrimaryNNK	SYAMS	AINRRGSAT ¹ RYADSVKG	YLHTF ¹ DY	RASQISSYLN	RASRLQ ¹ S	QHFGLRPGT ¹	1
11CG2,3	"	"	SYAMS	AINRRGSAT ² RYADSVKG	YLHTF ² DY	RASQISSYLN	AASALQ ² S	QQSDLPPST ²	2
11DH2	"	SomaticNNK	RYRMW	AISGSGGSTYYADSVKG	RPSTF ¹ DY	RASQSIAKNL ¹ S	AASSLQ ¹ S	QQSYSTPST ¹	1

FIG. 4B



11DH3	"	"	RYRMW	AISGSGGSTYYADSVKG	RPSTFDY	RASQSIKORLH	AASSLQS	QQSYSTPST	1
12CG1,2	Human	Primary NNK SYAMS	SIAPAGRHTYYADSVKG	NIRIFDY	RASQSISSYN	SASRLQS	QQRAGTPVT	2	
thyroglobulin									
12CG3	"	"	SYAMS	GITMTGRTTKYADSVKG	NISMIFDY	RASQSISSYN	QASRLQS	QQRVLRPPT	1
12DH1,2,3	"	Somatic NNK RYPMS	AISGSGGSTYYADSVKG	GFYAFDY	RASQSIVRVLT	AASSLQS	QQSYSTPHT	3	
13CG1	BSA	Primary NNK SYAMS	TITASGPNTRYADSVKG	NHSTFDY	RASQSISSYN	RASHLQS	QONRTAPRT	1	
13CG2	"	PrimaryDVT SYAMS	TIYYAGSNTYYADSVKG	GYTTFDY	RASQSISSYN	YASNLQS	QQSDTSPTT	1	
13CG3	"	Primary NNK SYAMS	MIYPGGY-TKYADSVKG	NADLFDY	RASQSISSYN	TASRLQS	QQMRKPPAT	1	
13DH1	"	Somatic NNK LYNMV	AISGSGGSTYYADSVKG	EWSRFDY	RASQSIKSLI	AASSLQS	QQSYSTPKT	1	
13DH2	"	"	GYMS	AISGSGGSTYYADSVKG	THDSFDY	AASSLQS	QQSYSTPIT	1	
13DH3	"	"	RYQMV	AISGSGGSTYYADSVKG	HLSRFDY	AASSLQS	QQSYSTPRT	1	
14CG1,2,3	Hen egg	Primary NNK SYAMS	EILPRGHRHTAYADSVKG	SGKHFDY	RASQSISSYN	NASTLQS	QQRKRLPET	3	
lysozyme									
14DH2,3	"	Somatic NNK YVEML	AISGSGGSTYYADSVKG	PFMSFDY	RASQSIHQDLV	AASSLQS	QQSYSTPRT	2	
19CG1,3	Mouse IgG	Primary DVT SYAMS	SIGSSGYGTGYADSVKG	GYYSFDY	RASQSISSYN	DASSLQS	QQSDSSPYT	2	
19DH2	"	Somatic DVT DYDMS	AISGSGGSTYYADSVKG	DGAGFDY	RASQSIGSSLs	AASSLQS	QQSYSTPNT	1	
20CG1	Human IgG	Primary NNK SYAMS	AISGLGKQTRYADSVKG	GYSRFDY	RASQSISSYN	SASLLQS	QQLGTPPRT	1	
20DH1	"	Somatic NNK RYEMS	AISGSGGSTYYADSVKG	SWTLFDY	RASQSIFTNLD	AASSLQS	QQSYSTPPT	1	
20DH2	"	"	RYEMS	SWTLFDY	RASQSIGTLLR	AASSLQS	QQSYSTPNT	1	

* of clone sequenced

FIG. 4C

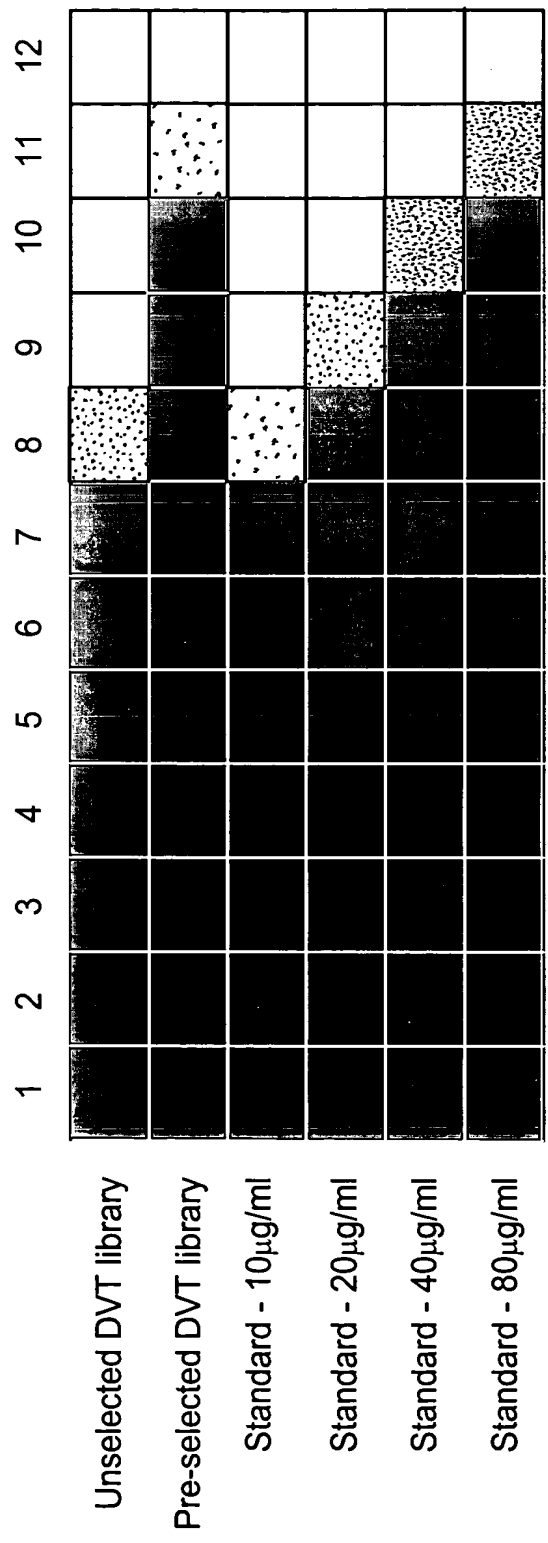


FIG. 5A

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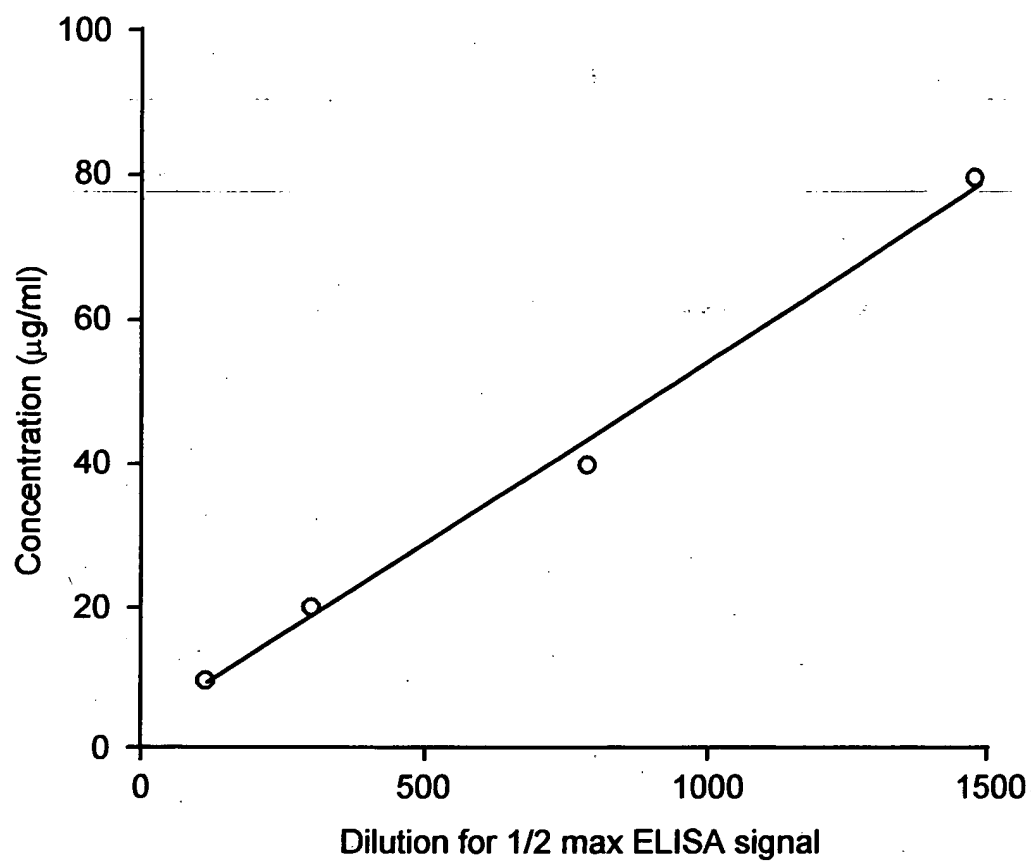


FIG. 5B

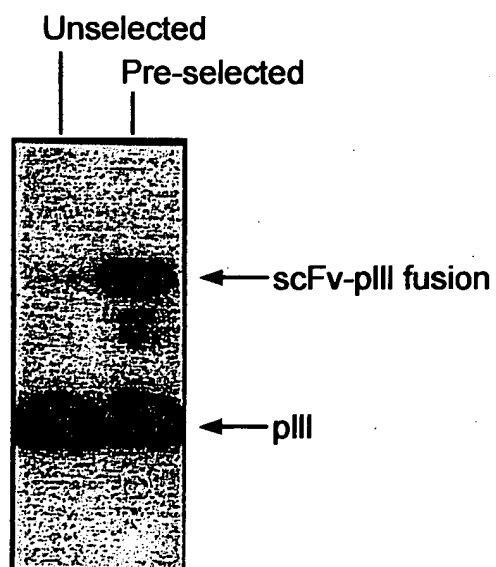


FIG. 6